

great benefit to early truck and berry growers. Heavy frost on the 5th in the States of the Ohio Valley resulted in little or no damage, as fruit trees were backward in budding. During the second week in April frost occurred in central and northern California, causing some damage to grape vines and tender vegetation. In the north Pacific coast States frost caused heavy damage to fruit.

No severe wind storms occurred on the Great Lakes or the seacoasts of the United States during the month. Several schooners and fishing boats were reported wrecked by high wind on the Yucatan coast on the 23d. During the afternoon of the 6th high wind caused some damage on the north Pacific coast.

CHICAGO FORECAST DISTRICT.

Warnings were sent of the heavy snowstorms of the month in the middle Rocky Mountain region.

No storm that seriously affected navigation passed over the upper Lake region during the month.—*H. J. Cox, Professor.*

SAN FRANCISCO FORECAST DISTRICT.

The showers of the early part of the month were successfully forecast.

Reports of injury by frost during the second week of April were much exaggerated.

About the middle of the month some interesting experiments were made in forecasting fog for the San Francisco Bay region with a good measure of success.—*A. G. McAdie, Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

Warnings were issued for the only severe storm of the month, which occurred on the 6th. This storm wrecked the new wharfs of the Dunsmuir collieries at Ladysmith, near Victoria, B. C., entailing a loss of over \$10,000.

The severe frosts of the month were successfully forecast. But little attention was paid to these warnings, although the frosts damaged fruit in Oregon alone to the amount of many thousands of dollars. The Oregonian editorially commented upon the apathy of the fruit growers in this connection, as follows:

Are not our farmers and fruit growers sufficiently intelligent to take advantage of the work of agricultural experiment stations, of the Weather Bureau and other scientific agencies, by which they gain a livelihood and feed the world? Is it their only privilege to grumble at the payment of taxes that support such institutions? It is to be hoped that the fruit growers are in a receptive condition of mind and that the lesson will now be learned that untimely frosts may be guarded against without money and without price.

E. A. Beals, Forecast Official.

HAVANA FORECAST DISTRICT.

No general storms occurred during the month and no special warnings were issued.

Severe local storms occurred at points in central and western Cuba on the 26th, and in eastern Cuba on the 27th—*W. B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

During the month there were eight highs and eleven lows which could be definitely traced (see Charts I and II). A

brief description of some of their most prominent characteristics is given herewith.

Highs.—None of the highs moved entirely across the country. Those which originated, or were first observed in the extreme West, were dissipated before or by the time the one hundredth meridian was reached, and No. II did not leave the Pacific coast. No. I originated in Manitoba, moved slowly south-eastward, and disappeared in central Tennessee. Nos. VI and VII originated in Tennessee and Kentucky, respectively, and, after very irregular courses, moved into the Atlantic Ocean by way of Cape Breton Island.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.										
I.....	3, a.m.	50	100	5, p.m.	36	87	Miles.	Days.	Miles.	Miles.
II.....	2, a.m.	34	118	4, a.m.	45	123	1,350	2.5	540	22.5
III.....	7, p.m.	41	134	10, a.m.	50	100	950	2.0	475	19.8
IV.....	14, a.m.	45	133	17, a.m.	50	100	1,800	2.5	720	30.0
V.....	17, a.m.	40	115	17, p.m.	40	105	1,475	8.0	492	20.5
VI.....	14, a.m.	35	85	18, a.m.	48	60	550	0.5	1,100	45.8
VII.....	19, a.m.	37	87	22, p.m.	46	60	1,775	4.0	444	18.5
VIII.....	28, a.m.	51	114	30, a.m.	40	105	2,450	3.5	700	29.2
							1,400	2.0	700	29.2
Sums.....							11,750	20.0	5,171	215.5
Mean of 8 paths.....							1,469		646	26.9
Mean of 20 days.....									588	24.5
Low areas.										
I.....	1, p.m.	42	88	4, a.m.	47	65	1,525	2.5	610	25.4
II.....	1, a.m.	43	123	14, p.m.	48	69	6,300	13.5	467	19.5
III.....	1, a.m.	48	122	12, a.m.	43	87	4,750	11.0	432	18.0
IV.....	6, a.m.	33	65	3, a.m.	54	114	700	2.0	350	14.6
V.....	6, a.m.	33	65	7, p.m.	46	60	1,050	1.5	700	20.2
VI.....	12, a.m.	43	123	20, a.m.	46	60	4,075	8.0	509	21.2
VII.....	17, p.m.	53	115	18, p.m.	53	105	400	1.0	400	16.7
VIII.....	18, a.m.	26	97	21, a.m.	40	91	1,400	3.0	467	19.5
IX.....	19, p.m.	50	110	21, a.m.	44	103	540	1.5	360	12.5
X.....	20, p.m.	43	112	22, p.m.	46	106	1,150	2.0	575	24.0
XI.....	21, p.m.	43	122	23, p.m.	46	106	950	1.0	950	39.6
	23, p.m.	37	100	25, p.m.	53	105	1,160	2.0	580	24.2
	28, p.m.	50	97	30, a.m.	46	73	1,225	1.5	817	84.0
Sums.....							28,825	50.5	7,217	298.4
Mean of 13 paths.....							2,217		555	23.1
Mean of 50.5 days.....									571	23.8

Lows.—The movements of the lows were extremely erratic throughout the month. No. I originated over northeastern Illinois, moved eastward to the Massachusetts coast, and thence northward. No. II was a remarkable development, occupying thirteen and one-half days for the movement of the main depression across the country, and traversing a path 6,300 miles in length. It originated on the Oregon coast on the morning of the 1st, reaching the Texas panhandle by the evening of the 5th; from this time until the morning of the 10th it shifted irregularly between the Texas coast and southwestern Kansas, again touching the Texas panhandle on the evening of the 8th; it was joined on the morning of the 8th by a secondary depression which had started from western Colorado on the evening before; by the morning of the 11th the center of disturbance had reached central Tennessee, by way of southwestern Mississippi, and there divided, the principal depression moving southward to central Alabama, and thence northeastward and northward to the upper Saint Lawrence Valley. The offshoot continued northward and was lost in western Lower Michigan. During the time this low was moving over Texas there were heavy and persistent rains over the eastern portion of that State. No. III did not move south of the forty-eighth parallel, nor east of the one hundred and fourteenth meridian. No. IV moved northward over the Atlantic Ocean by way of Bermuda, passing off through Newfoundland. No. V originated on the Oregon coast, and, after sending an offshoot to Alberta, moved to western Texas, and